An Examination of Factors Associated with Physical Activity Among Youth in Prince Edward Island

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We accept this thesis as conforming

to the required standards

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Dedication

To my Family and Friends for always supporting me and never letting me forget what's important.

Abstract

Background: The youth population of Prince Edward Island (PEI) is one of the least active in all of Canada (Colley et al., 2012). The social factors that influence youth physical activity (PA) behaviours are not well understood. There is a body of evidence which suggests there is a relationship between social influences and higher levels of PA; however little is known about the specific influential factors themselves. The purpose of this study was to identify if social factor variables selected based on the Social Cognitive Theory (SCT) and applied post-hoc, were associated with PA as defined by the 2010 CPAGL, in grades 5 to 12, and whether the resulting behaviour was affected by school level and gender (Janssen & LeBlanc, 2010). **Methods:** The study consisted of secondary data analysis of the Physical Activity Module of the School Health Action, Planning, and Evaluation System (SHAPES) PEI project, which collected self-report data from 4833 students in 58 schools across PEI. Logistic regression analysis was used to examine the variance between gender and within school level, as well as the strength of the association between social factors on youth PA. **Results:** There was a significant relationship between students meeting the 2010 CPAGL and the number of peers who were physically active. Students' level of self-efficacy was significantly associated with meeting the 2010 CPAGL, as was students' overall perceptions of the relationship between academic performance and participation in PA; additionally, male students were found to be significantly more likely to meet the 2010 CPAGL. **Conclusion:** The findings support the social cognitive concept that peer influence impacts PA behaviour. The findings also support the importance of self-efficacy to youth being

engaged in PA. A more comprehensive understanding of the relationship between the school policies and youth behaviour may assist in the development of effective interventions to support increased levels of PA.

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My thesis would not have been possible without the tireless efforts of my supervisor Dr. Donna Murnaghan, without your help and support this would never have come to fruition. The additional support I was provided by my committee members, Dr. Janet Bryanton and Dr. Scott Leatherdale was instrumental in my success. I would be amiss if I didn't acknowledge the efforts of Courtney Lawrence who held my hand through the most trying legs of this journey. With the most sincere humility I thank you all for making this possible.

Table of Contents

List of Appendices

List of Figures

List of Tables

Background

Problem Statement

Overweight and obesity, which lead to the deterioration of the health of youth across Canada, have been recognized in the last few decades as a growing burden on the Canadian population. Lack of participation in physical activity (PA) has been closely linked with the incidence of overweight and obesity in the adolescent population (Active Healthy Kids Canada, 2008). Current research suggests that physical inactivity is inversely correlated with the risk of obesity. Therefore, this might suggest that increasing PA should result in a decrease in the prevalence of obesity. Studies have tried to address the issue of obesity reduction by way of PA intervention but have not succeeded in demonstrating a significant effect on body mass index (Eisenmann, Bartee, & Wang, 2002).

The benefits of PA in delaying or preventing metabolic complications such as type 2 diabetes, cardiovascular disease, and hypertension are well recognized. PA has also been shown to improve bone mineral density, increase school performance, and have a positive effect on mental health (Dobbins, DeCorby, Robeson, Husson, & Tirilis, 2009). Further innovative research is needed to better define the role of PA in maintaining a healthy body weight.

Disappointingly, the 2011 Canadian Active Healthy Kids Report Card marks another decrease in Canadian PA levels, with only 7% of all Canadian children and adolescents meeting the new Canadian Physical Activity Guidelines (CPAGL) of at least 60 minutes of moderate vigorous physical activity (MVPA) per day (Colley et al., 2012). PA levels among youth in Atlantic Canada were among the lowest in

Canada, with daily step counts approximately 700 steps lower than the national average. Although Youth in Prince Edward Island (PEI) were the most active in Atlantic Canada, they also had an average daily step count of 466 steps below the national average (Colley et al., 2012).

With a vastly underactive youth population both nationally and in PEI, the necessity for more effective policies and interventions to promote and reinforce PA is paramount. A better understanding of the contextual and social influences of PA behaviour of youth in PEI is needed to guide the development of such policies and interventions.

Social-cognitive Theory (SCT) provides an explanatory framework for the PA behaviour of youth. A social-cognitive model of behaviour focuses on the interaction of individuals with those around them (peers, educators, parents, etc.) in addition to the intrinsic personal beliefs and attitudes of the individual. The application of the SCT has been found to explain the variance in PA behaviours and as such this model provides a reliable framework for the evaluation of PA in youth on PEI (Ayotte, Margrett, & Hicks-Patrick, 2010).

One aspect of the SCT, which needs to be examined in more detail, is the notion that intentions can vary over time. Bandura (1986) suggests that one of the key tenets of the SCT is that the decision to engage in behaviour is situational and may differ from moment to moment. The examination of changes in PA by school level may be as significant as the examination of gender differences, as it pertains to policy and interventions on Prince Edward Island. The gender differences in youth on Prince Edward Island must be considered to provide context for any policy that

may be developed on PA intervention because evidence has shown that females are historically less active than males (Byrd-Williams, Kelly, Davis, Spruijt-Metz, & Goran, 2007). The nature and impact of many social influences varies through development; therefore a better understanding of how these variations may effect youth PA is necessary.

This study used Bandura's Social-cognitive Theory (1986) to guide the selection of variables which were examined for their influence on adherence to the 2010 Canadian Physical Activity Guideline (Janssen & LeBlanc, 2010), by youth living on PEI. The theory considers the impact of social normative influences, personal beliefs and self-efficacy in the mechanism of behaviour.

Purpose and Objectives

The purpose of this study was to identify if social factor variables selected based on the SCT applied post-hoc were associated with PA as compared to the 2010 CPAGL, in grades 5 to 12, and whether the resulting behaviour was affected by school level and gender.

Specific objectives were:

1) To examine if social normative influences, personal beliefs, and personal behaviours (tenets of SCT) were associated with youth in PEI meeting the 2010 Canadian Physical Activity Guideline.
2) To examine if the strength of these associations were different by gender.
3) To examine if the strength of these associations were different by school level.

Significance of the Research

Changes in Canadian school policy such as the removal of mandatory physical activity in conjunction with increased screen time (television, mobile device, computer screen viewing) resulting from the emergence of portable hand-held computers and social networks, may explain the rising levels of physical inactivity, consequently leading to increased levels of sedentary behaviour. This increase in sedentary behaviour makes the need for novel investigations into ways to encourage more PA increasingly more important. Hamilton, Hamilton, and Zderic (2007) reported that the technological environments are large contributors to the progression of human inactivity not only in the United States, but also worldwide. Similar findings were reported by Owen, Healy, Matthews, and Dunstan (2010) and Sharma and Majumdar (2009). The consensus among these authors is that advances in technologies are directly linked to reduced demands for physical activity. Emailing, phoning, texting, and instant messaging all have replaced outdoor play as a means by which children engage socially and investigation is needed to better understand social influences and to increase PA in an effort to address this increasingly sedentary social behaviour.

The systemic reduction of access to PA and the increased dependence on screens only makes the extremely low level of PA in Canada more troubling. It is necessary to examine the social influences that current youth experience and how their impact on PA may have changed with the evolution of social interaction. In addition a comparative examination of how student PA levels vary by grade and

gender is important in identifying decreases in activity, with the proviso of finding better guidance for more informed interventions.

Literature Review

Youth Physical Activity

Since the introduction of the "Active Healthy Kids Canada Report Card on Physical Activity" in 2005, the status of youth physical activity in Canada has been consistently reported as substandard. In 2005 and 2006, Canadian youth scored a grade of D; since 2007 the grade has consistently been an F, indicating that Canadian children and youth between the ages of 2 and 17 are extremely inactive. In addition to the underperformance year after year, researchers are finding that with the increased availability of objective (accelerometer) as opposed to self-reported measures for PA, children and youth in Canada are far less active than previously thought. The obesity rates have tripled in the last 25 years, and according to Peeters et al. (2003), 26% of Canadian children ages 2 to 17 years are overweight or obese.

The association between sufficient PA participation and weight control and regulation has been examined in multiple studies (Dencker et al., 2006; Eisenmann, Bartee & Wang, 2002; Kim, et al., 2005; Rosenberg, Sallis, Conway, Cain, & McKenzie, 2006). According to a 2009 Cochrane review (Dobbins et al.), of 26 studies on school-based PA promotion, less than two-thirds of all young people are participating in sufficient physical activity to meet the 2010 CPAGL. The Cochrane review was focused on examining the outcomes of interventions and their successes on self-reported physical activity interventions. The review included studies which

examined one or a combination of the following interventions: changes to school curriculum; changes in school routines to increase time spent by students being physically active; increase in the time students engaged in vigorous physical activity during physical education classes; provision of equipment; training for teachers in incorporating physical activity into school curriculum; and routines and educational materials for teachers, students, and parents. The results showed gains in increased duration of PA, reduction in television viewing time, increases in VO2Max (maximal rate at which oxygen is consumed by the body), and reduction of blood cholesterol.

The 2005 Canadian Community Health Survey sampled Canadian youth aged 12 to 15 years and completed a cross-sectional analysis across the regions. Data from the survey showed that in PEI, 28.7% of youth (ages 12-17) in Prince and King's counties were sufficiently active and 19.9% of youth in Queens County were sufficiently active. Prince and King's counties consist primarily of rural communities; whereas Queens County is the central urban region of the province. The findings from PEI were consistent with the Canadian average of youth being sufficiently physically active at 21.5%. The disconcerting aspect of this information is that nearly four-fifths of the youth population in Canada, including PEI, are not active enough and are at risk for overweight or obesity (Active Healthy Kids Canada, 2005).

In 2007, Byrd-Williams et al. examined gender differences in Hispanic children and found that males showed significantly higher levels of PA and lower levels of sedentary behaviour. The findings were consistent with non-Hispanic populations by Fulton et al. (2009) who examined a population of youth ages 10 to

18 years. The differences in gender remain consistent with in the literature examining youth PA, which concludes that more attention and effort be placed on promoting PA in female youth (Janssen & LeBlanc, 2010; Trost, Rosenkranz, & Dzewaltowski, 2008).

School level differences in PA behaviour have traditionally been examined based on age grouping. In 2009, Pate et al. found that female students between grade six and grade eight experienced a statistically significant decline of 4% in PA. In 2011, Basterfield et al. completed a longitudinal study on PA and reported a significant decline in PA as youth aged. Physical activity decline with age can be a result of environmental changes, a reduction in mandatory PA in the school, as well as social influences (Craggs, Corder, van Sluijs, & Griffin, 2011; Ridgers, Timperio, Crawford, & Salmon, 2012).

Canadian Physical Activity Guidelines

In January 2011, the Canadian Society of Exercise Physiologists (CSEP) in conjunction with Health Canada released the most recent Canadian Physical Activity Guidelines (CPAGL). The guidelines were developed by the Physical Activity Measurement and Guidelines (PAMG) Steering Committee under the Canadian Society for Exercise Physiology (CSEP) using the Appraisal of Guidelines for Research Evaluation (AGREE II) Instrument. The supporting evidence for the guidelines consisted of 14 background papers and 5 systematic reviews. The authors reviewed the evidence, and recommendations were made and presented at a consensus conference. An independent, international committee of experts attending the conference reviewed the evidence and achieved consensus on both the

quality of evidence informing the guidelines and the recommendations themselves (Tremblay, Kho, Tricco, & Duggan, 2010).

The CPAGL guidelines provide three recommendations for PA standards in children and youth: (a) "Children and youth 5 to 17 years of age should accumulate an average of at least 60 minutes per day and up to several hours of at least moderate intensity physical activity. Some of the health benefits can be achieved through an average of 30 minutes per day" (Janssen & LeBlanc, 2010, p.11,);(b) "More vigorous intensity activities should be incorporated or added when possible, including activities that strengthen muscle and bone" (Janssen & LeBlanc, 2010, p.12); and (c) "Aerobic activities should make up the majority of the physical activity. Muscle and bone strengthening activities should be incorporated on at least 3 days of the week" (Janssen & LeBlanc, 2010, p.13).

The guidelines provide a standard of measure for the development of interventions and evaluative research. The primary purpose of CPAGL is not to motivate or engage behaviour; instead the guidelines provide a benchmark of how much PA is required to receive the benefits (Janssen & LeBlanc, 2010). The most recent PA guidelines will serve to inform similar strategies to improve the health of the Canadian public (Janssen & LeBlanc, 2010; Latimer, Brawley, & Bassett, 2010).

Health Benefits of Physical Activity

The benefits of regular PA include improved cardiovascular function, muscular strength and endurance, and improved mental health (Active Healthy Kids Canada, 2010). Nielsen and Andersen (2003) found that poor fitness and high body mass index (BMI) were direct predictors of hypertension in low activity youths. BMI

was found to be a greater predictor of hypertension than activity alone. Hagberg et al. (1983) found that moderate levels of PA were able to lower blood pressure in hypertensive youths. The study examined the effects of PA on the reduction of cardiac output and found that the subjects who were initially hypertensive, achieved a reduction in both heart rate and stroke volume as a result of the intervention. Stergioulas, Tripolitsioti, Messinis, Bouloukos, and Nounopoulos (1998) measured blood concentrations of high-density lipoprotein (HDL), cholesterol, and prostacyclin and found that regular PA has a beneficial effect on lowering HDLs and may potentially prevent atherosclerosis in adulthood.

Adequate bone mineral growth is critical in the developmental period of life (Petit et al., 2002; McKay et al., 2005). McKay et al. (2000) undertook a school-based jumping intervention program to examine the benefits of impact-focused PA on bone mineral density. The study concluded that by implementing a simple jumping intervention, the bone mineral density in the trochanteric region of the femur was augmented. It has been shown that "a school-based, high-impact exercise intervention implemented three times a week for 12 minutes is an effective strategy for site-specific gains in bone strength at the narrow neck region of the proximal femur" (MacKelvie, Khan, Petit, Janssen, & McKay, 2003; MacKelvie, Petit, Khan, Beck, & McKay, 2004, p.755).

Feelings of euphoria and elation are often associated with PA. PA leads to the release of neurotransmitters that trigger positive feelings. Brosnahan, Steffen, Lytle, Patterson, and Boostrom (2004) evaluated the relationship between PA and feelings of sadness and suicidal thoughts in youths. The study concluded that PA provided a

beneficial effect in the reduction of sadness and suicidal thoughts and that it may be an effective strategy to improve youth mental wellbeing. A number of studies have explored the negative relationship between PA and depression. Haarasilta, Marttunen, Kaprio, and Aro (2004) conducted a study to determine the major correlates of depression. The study concluded that infrequent PA was a variable associated with depression. Annesi's (2005) study regarding how a PA intervention impacted mood states of youths showed that PA was associated with improved mental state in children ages 9 to 12.

Associated Risks of Physical Inactivity

Obesity is a growing problem for child and youth populations in Canada; whereas physical activity levels decrease (Warburton, Katzmarzyk, Rhodes, & Shephard, 2007). The association between sufficient PA participation and weight control and regulation has been cited in studies by Eisenmann et al. (2002), Rosenberg et al. (2006), Dencker et al. (2006), and Kim et al. (2005). According to Dobbins et al. in their 2009 Cochrane review on school based PA promotion, less than two-thirds of all young people report participating in sufficient physical activity to meet guidelines. Additionally, in 2003, Tremblay and Willms evaluated the PA and sedentary behaviours of 7,216 Canadian children aged 7 to 11. The study concluded that sport and PA were negatively associated with being overweight or obese and that screen time and sedentary behaviour were considered risk factors for obesity and overweight.

Literature Supporting Theoretical Framework

Theory is used to help researchers understand how various factors are associated with outcomes. Theory is used to identify important variables in the development of intervention studies, and allows researchers to predict meaningful indicators in evaluative studies (Keller et al., 2009; Rimer & Glanz, 2005). Using theory to guide a research study is considered more rigorous because it allows for evidence to be presented in a defined context. Meaningful theory is able to provide an organized explanation of how variables interrelate and by doing so allows for the prediction of outcomes. Through quantitative research theory can be supported or refuted.

In a theoretical guide produced for the United States Department of Health, Glanz, Rimer, and Viswanath (2008) outlined major health behaviour theories commonly used in physical activity research. The theories identified as most prevalent were: The Health Belief Model (HBM), SCT, and the Theory of Planned Behaviour. The authors suggested that when health behaviour theories are applied to physical activity research, they focus on a series of common elements depending on the study.

In a 2009 review of PA intervention studies, Keller, Fleury, Sidani, and Ainsworth identified 15 high quality articles from 470 studies that evaluated PA with a theoretical framework. From the 15 articles chosen for analysis, Keller et al. identified the Social-Cognitive Theory (SCT) as being the most prominent in intervention studies.

Health Behaviour Theory

Health behaviour theory is a structured approach for evaluation and intervention design in health, with behaviour change as the primary measured outcome. Whether evaluative or intervention-based, health behaviour theories address cognitive factors, value judgments, and outcome expectations associated with healthy behaviours. In health behaviour theory there are two types of theoretical models: theories that address the stages of health behaviour change and theories that assess the motivational components associated with health behaviour change. Health behaviour theories address variables associated with situational perception, value judgment of outcomes and interactions, self concept, social pressures, and conceptualization of change (Keller et al., 2009; Lubans, Foster, & Biddle, 2008; Rimer & Glanz, 2005).

As noted, health behaviour has been addressed by the development of several theories. For the purpose of this study the Social-Cognitive Theory (SCT) was chosen to analyse the PA behaviour of youth on PEI. The SCT guided the examination of intrinsic and social factors influencing the PA behaviour of the students.

Social Cognitive Theory

The SCT is a health behaviour theory developed by Bandura in 1977. The SCT originates from work by Rotter (1960) who developed the Social Learning Theory (SLT). In SLT, behaviour change is explained by three interconnected factors: (a) the personal beliefs of the individual; (b) the behaviour of the individual; and (c) the social normative influences. The relationship of all these factors occurs reciprocally in an on-going way that allows a person's behaviour to shape his/her social

environment and a person's social environment to shape his/her behaviour (Rotter, 1960). Bandura and McClelland (1977) built on the SLT in developing the SCT by emphasizing the cognitive aspects of the behaviour change process. The SCT indicates that reinforcement leads to learning and that behaviour change occurs when learning is combined with outcome expectations (Bandura, 1986). Outcome expectations are a cognitive component of the SCT, which is considered critical in behaviour change (Bandura, 2004). If the expected outcome is positive then the individual is more likely to engage in the behaviour, and the more value the individual places on the outcome the more likely he/she is to undertake the behaviour. According to the SCT, outcome expectations are shaped by social influences and self-efficacy. Self-efficacy is the belief in one's own ability to perform or accomplish a task (Bandura, 1986). The SCT is conceptualized to explain the tendency of an individual to avoid negative outcomes. The motivation for action according to the SCT is the anticipation of harm, and through cognitive inclusion of environmental influences, reinforcement of past behaviour and the self-efficacy of the individual, behaviour change occurs to avoid or reduce a negative outcome (Lippke, Nigg, & Maddock, 2012; Rosenstock, Stretcher, & Becker, 1988).

The Social Cognitive Theory and Physical Activity. The SCT is a frequently used theoretical framework for explaining and predicting PA behaviour. The SCT was used by Netz and Raviv (2004) to determine the motivational factors associated with PA behaviour. The study determined that level of education was closely associated with PA and that both were positively correlated with self-efficacy. Petosa, Hortz, Cardina, and Suminski (2005) studied the relationship between the

SCT and moderate-vigorous PA among youths. The study determined that the SCT accounted for 31% of the variance in the frequency of physical activity. The authors concluded that the SCT was an appropriate model for predicting and explaining the frequency of PA among youths. In another study, the SCT was used to determine the relationship between the PA levels of parents and the PA levels of their children. This study concluded that modelling of parental behaviour (Social Modelling) was correlated with the activity levels of the children. Additionally, the encouragement by parents was more prevalent in active parents and was indicated as a second correlate to increased activity in children (Moore et al., 1991). Also, the SCT was used by Strauss, Rodzilsky, Burack, and Colin (2001) to determine PA behaviours in an effort to prevent child obesity. Ninety-two children were monitored with accelerometers and were provided a survey to measure the cognitive components of the SCT. The use of the SCT in the study led to the conclusion that self-efficacy and social influences were positively correlated with intense PA. As a predictive model, the SCT was used to identify the social cognitive variables and environmental constructs associated with PA. This study by Martin and Mc Caughtry (2008) indicated that the support of peers and exposure to an activity-promoting environment (going outside) for youths was an accurate predictor of PA. In 2010, Ayotte, Margrett, and Hicks-Patrick examined the use of SCT to explain PA behaviour in youth and young adults and concluded that the constructs of the SCT were associated with PA. They suggested that targeted interventions addressing these factors may increase PA. The benefits of the SCT have been illustrated by several studies in the past (Ince, 2008; Netz & Raviv, 2004; Petosa et al., 2005)

making the SCT an appropriate model for the evaluation of factors associated with PA behaviours in students in Prince Edward Island.

Self -Efficacy and SCT. In considering all the theoretical models that have been applied to explain the variety of factors that lead to physical activity behaviour change, social cognitive theory was chosen for this study because it provides the most comprehensive focus on self-efficacy which, according to Bandura (2011), is the single most important component of the SCT. In Bandura's social cognitive model, self-efficacy is comprised of four factors: (a) mastery, the level of skill in the task or behaviour; (b) observation, viewing how others perform and being able to equate that to one's own performance; (c) persuasion, the encouragement or suggestion from others to engage in the behaviour; and (d) state, the current emotional state of the individual (Bandura, 1986). Bandura (1986) defines self-efficacy in the context of SCT as the intrinsic belief in one's ability to undertake a particular behaviour or goal. Self-efficacy is considered to be situation dependant, in that, although a behaviour may be undertaken at one time, the self-efficacy of the individual is not a constant for that situation and as such the behaviour may not be repeated if the situation presents itself in the future (Annesi, 2006).

Guiding Theoretical Model

The SCT posits that social norms such as the peer behaviour and personal beliefs like the self-efficacy of the student can influence behaviour (Figure 1). By utilizing the SCT to guide the selection of social and behavioural variables, this study may provide an explanation for how influences on the student affect whether or not the student's PA behaviour meets the 2010 Canadian Physical Activity Guideline.

Factors that reinforce PA may include modeling and encouragement by peers and parents. In addition the self-efficacy may intrinsically encourage PA for students leading them to participate in more activity.

The SCT has been used to explore PA behaviour previously; however what is not clear is whether the SCT is effectively able to guide the secondary analysis of data. Although the data collection for this study was conducted independent of this analysis, the questions posed to students will be used collectively to analyse the data from the lens of the SCT.

Variables were selected to represent the indirect environment of the student thus incorporating the SCT, and subsequently to represent personal beliefs (self efficacy) and social normative influences (observation of peers and parents) which collectively form the SCT.

In this thesis the SCT was used to select and analyse variables that are best able to represent the layers of social influence on the participants. As a result of the theoretical framework being applied post hoc, the specific variables chosen were deemed to be the closest measures of the SCT available in this data set. The measures used for this thesis expand on the social influences on the student providing a framework that most closely represents: social normative influences, personal beliefs, and personal behaviours.

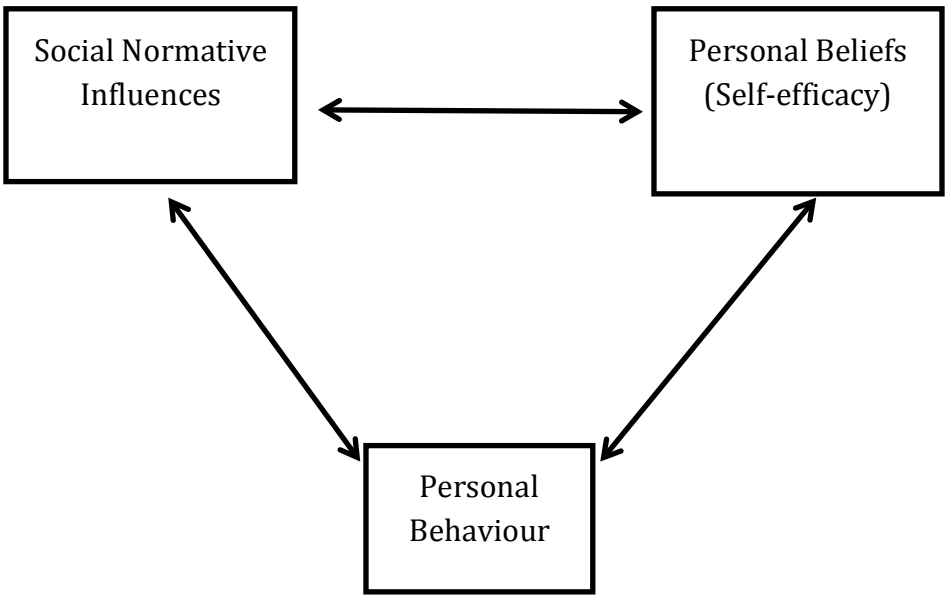

Figure 1 – Social Cognitive Framework

Methods

This study used an exploratory design to conduct a secondary analysis of cross sectional data collected in 2008 from students attending elementary, intermediate, and high schools in Prince Edward Island, Canada as part of the School Health Action Planning and Evaluation System (SHAPES) survey. The sampling design was a convenience sample of students from participating schools. The SHAPES survey included four modules: Tobacco, Physical Activity, Healthy Eating, and Mental Fitness. The focus of this secondary analysis was the Physical Activity module (See Appendix 1). Only surveys from students who completed the Physical Activity module were included in this secondary analysis.

Sample and Setting

The target population for this secondary analysis research was students attending elementary, intermediate, and high schools (grades 5 through 12) in Prince Edward Island. The Comprehensive School Health Research Team (CSHRT) collected self-reported physical activity and social influence data from 4,833 students attending 58 schools in the province. This represents a 77% student level and 85% school-level response rate.

Eligibility criteria for inclusion of schools specified that they: (a) be publicly funded; (b) consented to the use of class time for students to participate in surveys and interviews; and (c) comprised a socio-economic status that is representative of the PEI school population. Eligibility criteria for student participation required: (a) students from each grade level (5-12); and (b) the ability to speak and read English or French.

Ethics Approval

Ethical exemption for this secondary analysis was obtained from the UPEI Research Ethics Board (See Appendix 2). The original study received ethical approval from the University of Prince Edward Island and from the appropriate school boards, principals, parents, and students. This secondary analysis of the data is consistent with the original ethics applications.

Primary Study Design

This cross-sectional design used provincially representative data collected as part of the 2008 wave of SHAPES-Prince Edward Island (SHAPES-PEI). The purpose of the primary study was to collect data every 2 years to monitor and explore

changes in health behaviours of the PEI student population over time. SHAPES-PEI used the SHAPES system of data collection and feedback (Cameron et al., 2007; Leatherdale, Manske, Wong, & Cameron, 2009) to collect modular self-report data from grade 5 to12 students in 58 schools. In 2008 SHAPES PEI asked students questions regarding four health behaviours: healthy eating, physical activity, substance use, and mental fitness. Students completed one 12-page questionnaire that asked questions covering all four of the behaviours. Overall, 58/68 (85%) of all eligible schools in PEI participated and data were collected from 4,833 students (77% response rate). As approved for the original study ethical protocol, active information and active consent was required for students under age 14; while active information and passive consent was approved for students over age 14. All parents received a detailed letter about the study requesting that their child be allowed to participate in the study. Parents of students under age 14 were required to return a written consent form; while parents of students over age 14 were provided a toll free telephone number to call if they did not want their child to participate in the study. Questionnaires were administered by teachers during class time and students were not provided compensation. Missing respondents resulted from parent/student refusal and absenteeism on the day of the survey. Additional details on the SHAPES-PEI methods and design are available online (http://www.upei.ca/cshr/SHAPES). Anonymity of the students was assured. Only cleaned data files with identifiers removed were used in this secondary analysis. The data files were cleaned and validated by the primary research group, the CSHRT. Individual participant files were maintained by the CSHRT per original UPEI

Research Ethics Board approval (certificate #6003694).

Variables for Secondary Analysis

The variables chosen for this study were selected from the physical activity module of SHAPES and were selected as the closest measures for social normative influences, personal beliefs and personal behaviours. The selected variables are consistent with previous research and have been previously validated in youth samples (Wong, Leatherdale, & Manske, 2006).

Demographic variables. The information utilized in these analyses included gender, and school level. For this study, age was not collected as a demographic variable; school level groupings were used as a representation of age demographically. Gender was ascertained by asking "What is your sex?" 1 = Female, or 2 = Male. Students were selected from eight grade choices consisting of: 5 = Grade 5, 6 = Grade 6, 7 = Grade 7, 8 = Grade 8, 9 = Grade 9, 10 = Grade 10, 11 = Grade 11, and 12 = Grade 12. The school level of students was ascertained by combining reported grade levels: Elementary School = grades 5 and 6, Intermediate School = grades 7, 8, and 9, and High School = grades 10, 11, and 12.

Social normative influences. Social normative influences govern the likelihood of performing a given behaviour and are based on the approval or disapproval of individuals or groups deemed important to the student. The strength of each normative belief is multiplied by the person's motivation to comply with the particular referent. Behaviours modelled by peers, parents and other trusted individuals are considered reinforcement for the behaviours according to the Social Cognitive theory (Bandura, 1986). For this analysis, two items were used to

measure social norm influence, the exemplar norms of the students' parents, and the exemplar norms of the students' peers.

Parental encouragement is important reinforcement for social norms and is a component of the social cognitive theoretical model being used to guide this study (Biddle & Goudas, 1996; Pérusse, Tremblay, Leblanc & Bouchard, 1989). As an accepted indication of social norms, parental encouragement was selected as a student level correlate of behaviour. Parental encouragement was measured using the variable "How much do your parents, step-parents or guardians encourage you to be physically active?" rated on a 5-point likert scale from 1 (Strongly encourage) to 5 (Strongly discourage) by the participants, to indicate at what level the students receive encouragement from their parents.

Peers are a recognized referent for social norms and their involvement in physical activity has been positively linked with individual physical activity behaviour. The social experience of participation in physical activity with friends is the motivating factor for youth and adolescents joining their friends. Peer involvement was measured by asking students how many of their closest friends were involved in physical activity (Strauss et al., 2001). Peer involvement was assessed using the variable "Your closest friends are the friends you like to spend the most time with. How many of your closest friends are physically active?" Rated on an ordinal scale indicating the number of friends identified as being active, response options included 0 (None), 1(1), 2(2), 3(3), 4(4), and 5(5 or more).

The variables for both parental encouragement and peer involvement form the social normative influences of the social cognitive component of the overarching

theoretical framework that was used to guide this study. Cronbach's alpha was the coefficient of reliability used to compute internal consistency reliability for items measuring the social cognitive component of the theoretical framework guiding this study. The internal consistency for social norms measured -0.50. The negative alpha indicates a lack of consistency between the variables used to measure social norm; therefore the two variables were considered separately in the data analysis.

Personal beliefs. One of the key components to the SCT is the personal beliefs of the students which shape and influence how they behave and interact with peers and while performing tasks like physical activity. The variables reflecting personal beliefs provided the third element of the social cognitive component of the theoretical framework used to guide the secondary data analysis for this study.

Personal beliefs, such as the belief that participation in physical activity is related to favourable school performance, are reinforcement to participate in physical activity (Pate, Heath, Dowda, & Trost, 1996). The belief in the peripheral value of physical activity was assessed with the variable "Students who are physically active do better at school" rated on a 5 point scale from 1(strongly agree) to 5(strongly disagree).

Perceived athletic ability of the participants in comparison to their peers was chosen in an attempt to include a measure which would represent the self-efficacy of the students. The personal belief of one's own abilities in comparison to peers is an important measure of perceived social standing (Biddle & Armstrong, 1992). In the context of physical activity, a social comparison like evaluating self-behaviour or performance against other individuals is an indication of self-efficacy (Zimmerman

& Schunk, 2001). The personal beliefs of students was assessed with the variable "In general, compared to other people your age, how would you rate your athletic ability?" rated on a 4- point scale from 0(poor) to 3(Excellent).

Personal behaviour. As an element of the social cognitive theory, behaviour is the outcome variable chosen for the purpose of this secondary analysis. Physical activity was selected to provide a self-reported measure of behaviour. The data used for the secondary analysis was collected using a survey that had been validated to confirm that the self-reported measures of physical activity are accurate for internal comparison (Wong, Leatherdale, & Manske, 2006). By using the Canadian Physical Activity Guidelines as a standard measure, we attempted to assess if the social cognitive factors of the SCT framework guiding this thesis could explain whether a subject is likely to meet the minimum recommended physical activity.

Behaviour was assessed using multiple self reported activity variables, which were aggregated to determine whether the student did or did not meet the 2010 Canadian Physical Activity Guidelines. The guidelines stipulate the following requirements: 60 minutes of moderate physical activity daily, 30 minutes of vigorous physical activity 3 days per week, and three sessions of strength building activity 3 days per week.

Sixty minutes of moderate physical activity daily was assessed with the items "Mark how many minutes of MODERATE physical activity you did on each of the last 7 days" and "Mark how many minutes of HARD physical activity you did on each of the last 7 days". Both items were reported in minutes and hours. If the total amount of combined physical activity time reported for each day for all 7 week days

exceeded 60 minutes the student was deemed to have met the recommended guideline. Thirty minutes of vigorous physical activity 3 days per week was assessed with the item "Mark how many minutes of HARD physical activity you did on each of the last 7 days." This item was reported in minutes and hours. If the combined physical activity reported exceeded 30 minutes, a minimum of 3 days of the week the student was deemed to have met this requirement of the guideline. Three sessions of strength building activity 3 days per week was assessed with the item "In the last 7 days, how many days did you do exercises to strengthen or tone your muscles, such as push-ups, yoga, or weight lifting?" rated on an 8 point ordinal scale from 0 (0 days) to 7 (7 days). If three or more sessions of strength building activity were reported, the student was deemed to have met this requirement of the guideline.

The variables were aggregated to determine which students met all three conditions, and those who did were deemed to have met the requirements of the 2010 Canadian Physical Activity Guidelines. The measure used for analysis consolidated students into two groups; Yes, the Student Meets the Guidelines, and No, the Student Does Not Meet the Guideline.

Data Analysis

Preliminary analysis. For this secondary analysis, data were analyzed using SPSS 12 software (SPSS Inc., 2003). Analyses were conducted on the complete data set and subsequently separated by gender and school level. Summary statistics for demographic data were calculated: percentage totals, mean values, and standard deviations were determined for the independent demographic variables of gender

and school level. A chi-square analysis was used to determine if the distribution of these variables was based on gender. Next bivariate analyses were completed between all the variables to determine the association among independent variables, and the relationship of these with the dependent variable of meeting the 2010 Canadian PA guidelines. All variables that were significantly associated with the dependent variable were included in the multivariate analysis.

Logistic regression. A logistic regression was used to explore variables associated with the likelihood of meeting physical activity guidelines and if the SCT framework for this study explained significant variation in physical activity behaviour. Three separate regressions were completed to determine the relationship strength for all subjects, and subsequently to compare differences between genders and school levels.

Logistic regression analyses were conducted for both males and females separately to examine gender differences in student level factors associated with meeting the minimum standards for the 2010 Canadian Physical Activity Guideline (CPAGL). Additionally a logistic regression was conducted for each school level separately in order to examine demographic differences in student level factors associated with meeting the minimum standards for the 2010 Canadian Physical Activity Guideline (CPAGL).

Results

Preliminary Analysis

Demographics characteristics of student physical activity behaviours are presented in Table 1. Reporting students (n=4833) were from schools in both rural and urban areas of Prince Edward Island, with slightly more females (about 52%) than males. Approximately 1 in 5 students who were surveyed reported all the necessary behaviours to meet the requirements of the 2010 Canadian Physical Activity Guideline (20.9%).

The results of the analysis in Table 1 outline the distribution of students who meet the CPAGL separated by variable. The results indicate that nearly twice as many male (n=611) students reported meeting the CPAGL than female (n=354) students. The distribution of responding students by school level was similar across school levels with 1515 elementary school level students, 1636 intermediate level students and 1682 high school level students. The results of the Student's perceived athletic ability demonstrated that of the students that met the CPAGL the vast majority reported either having "Excellent" athletic ability (n=463) or "Good" athletic ability (n=431). Only 10.5% of students reported having "Fair" or "Poor" athletic ability. Lastly, of the students who met the CPAGL, 89.7% reported having 3 or more friends who are physically active. The results indicate that male and female students who met the CPAGL were not distributed by chance ($X^2 = 112.004$, $df = 1$, $p < 0.05$). The distribution by school level as it pertains to meeting the CPAGL was found to not be by chance as well ($X^2 = 43.056$, $df = 2$, $p < 0.05$). The remaining

Table 1

Demographics (n=4833), Guideline Adherence, and Beliefs Among Grade 5 to 12 students on Prince Edward Island (2008)

Variable	Meets GL % (n)	Does Not Meet GL % (n)	Analysis X^2, P value
Gender			
Female	36.7 (354)	55.8 (2050)	$X^2 = 112.004$, $df = 1$, $p < 0.05$
Male	63.3 (611)	44.2 (1623)	
School level			
Elementary (Grades 5-6)	23.6 (238)	33.4 (1277)	$X^2 = 43.056$, $df = 2$, $p < 0.05$
Intermediate (Grades 7-9)	40.9 (412)	32.0 (1224)	
High (Grades 10-12)	35.5 (358)	34.6 (1324)	
Students perceived athletic ability			
Excellent	46.3 (463)	20.0 (622)	$X^2 = 332.526$, $df = 3$, $p < 0.05$
Good	43.1 (431)	48.4 (1502)	
Fair	9.2 (92)	23.9 (743)	
Poor	1.3 (13)	7.6 (237)	
Students view physically active students as being better in school			
Agree	66.1 (662)	48.3 (1505)	$X^2 = 97.066$, $df = 2$, $p < 0.05$
Disagree	14.1 (141)	23.5 (731)	
"I don't know"	19.9 (199)	28.2 (878)	
Students whose parents encourage physical activity			
Encourage	14.6 (146)	24.2 (750)	$X^2 = 40.888$, $df = 2$, $p < 0.05$
Neutral	84.3 (843)	74.8 (2316)	
Discourage	1.1 (11)	1.0 (32)	
The number of physically active friends a student reports having			
≥3 Friends	89.7 (902)	4.6 (144)	$X^2 = 104.945$, $df = 2$, $p < 0.05$
1-2 Friends	8.3 (83)	21.1 (654)	
0 Friends	2.1 (21)	74.3 (2306)	

variables that comprise the main components of the analytical framework were all normally distributed: Student's perceived physical activity ability (X^2 = 332.526, *df* = 3, $p < 0.05$); student's view physically active students as being better in school (X^2 = 97.066, *df* = 2, $p < 0.05$); students whose parents encourage physical activity (X^2 = 40.888, *df* = 2, $p < 0.05$); and the number of physically active friends a student reports having (X^2 = 104.945, *df* = 2, $p < 0.05$). The results of the distribution analysis presented in Table 1 indicate that all variables are not distributed by chance.

Logistic Regression

Overall findings from the logistic regression analyses indicate that students who were male (OR = 2.09; 95% CI = 1.78, 2.45, p<0.05) were more likely than females to meet physical activity guidelines. Students who had 0 (OR = 0.46; 95% CI = 0.36, 0.60, p<0.05) or 1-2 friends (OR = 0.47; 95% CI = 0.27, 0.82, p<0.05) who were physically active were less likely than students who reported 3 or more friends to meet the 2010 CPAGL. Students who reported disagreeing (OR = 0.66; 95% CI = 0.54, 0.81, p<0.05) or said "I don't know" (OR = 0.58; 95% CI = 0.46, 0.73, p<0.05) to the notion that students who are physically active perform better in school were

Table 2
Logistic Regression Odds Ratios for Meeting the 2010 Canadian Physical Activity Guidelines (n=3843)

Variable	OR (95% CI)
Gender	
Female (ref)	1.00
Male	2.09(1.78, 2.45)**
School level	
High (Grades 10-12) (ref)	1.00
Intermediate (Grades 7-9) (1)	1.03 (0.82, 1.30)
Elementary (Grades 5-6) (2)	1.06 (0.82, 1.22)
Students' perceived athletic ability	
Excellent	1.00
Good	0.10 (0.05, 0.20)**
Fair	0.24 (0.18, 0.31)**
Poor	0.42 (0.35, 0.50)**
Students view physically active students as being better in school	
Agree	1.00
Disagree	0.66 (0.54, 0.81)**
"I don't know"	0.58 (0.46, 0.73)**
Students whose parents encourage physical activity	
Encourage	1.00
Neutral	1.21 (0.97, 1.50)
Discourage	1.31 (0.56, 2.99)
The number of physically active friends a student reports having	
≥3 Friends	1.00
1-2 Friends	0.47 (0.27, 0.82)**
0 Friends	0.46 (0.36, 0.60)**

*Note. **p<0.001*

less likely to meet the 2010 CPAGL than students who reported agreeing. Students who perceived their abilities in PA as either Good (OR = 0.10; 95% CI = 0.05, 0.20, p<0.05), Fair (OR = 0.24; 95% CI = 0.18, 0.31, p<0.05), or Poor (OR = 0.42; 95% CI = 0.35, 0.50, p<0.05) were also less likely to meet the 2010 CPAGL then students who perceived their abilities in PA to be excellent (See Table 2).

Student Level Findings. Student level findings based on gender showed (Table 3) the likelihood of meeting the guideline decreased for males who had 1 -2 physically active friends (OR = 0.38; 95% CI = 0.18, 0.80, p<0.05) or 0 physically active friends (OR = 0.36; 95% CI = 0.25, 0.53, p<0.001). Similarly, female students who reported having 0 active friends showed a decrease in the likelihood of meeting the 2012 CPAGL (OR = 0.59; 95% CI = 0.42, 0.85, p<0.05). Male students who disagreed (OR = 0.57; 95% CI = 0.44, 0.74, p<0.001) with the statement "Students who are physically active do better at school" or who responded "I don't know" (OR = 0.49; 95% CI = 0.37, 0.65, p<0.001) were less likely to meet the physical activity guideline than male students who agreed with the statement. For female students, there was no significant relationship between their agreement with the statement "Students who are physically active do better at school" and meeting the physical activity guideline. Additionally, when students were asked to rate their perceived athletic ability, both male and female students who responded Good (Female: OR = 0.14; 95% CI = 0.06, 0.30, p<0.05, Male: OR = 0.06; 95% CI = 0.02, 0.20, p<0.05), Fair (Female: OR = 0.18; 95% CI = 0.12, 0.27, p<0.001, Male: OR = 0.29; 95% CI = 0.21, 0.42, p<0.001), and Poor (Female: OR = 0.42; 95% CI = 0.32, 0.54, p<0.001, Male: OR = 0.42; 95% CI = 0.34, 0.53, p<0.001), were less likely to meet the physical activity

Table 3

Logistic Regression Odds Ratios by Gender for Meeting the 2010 Canadian Physical Activity Guidelines (n=3843)

Variable	Female (n=1999) OR (95% CI)	Male (n=1844) OR (95% CI)
School level		
High (Grades 10-12) (ref)	1.00	1.00
Intermediate (Grades 7-9) (1)	1.02 (0.83, 1.62)	0.99 (0.73, 1.31)
Elementary (Grades 5-6) (2)	1.01 (0.76, 1.34)	1.04 (0.82, 1.33)
Students' perceived athletic ability		
Excellent	1.00	1.00
Good	0.14 (0.06, 0.31)**	0.06 (0.02, 0.20)**
Fair	0.18 (0.12, 0.27)**	0.29 (0.21, 0.42)**
Poor	0.42 (0.32, 0.54)**	0.42 (0.34, 0.53)**
Students view physically active students as being better in school		
Agree	1.00	1.00
Disagree	0.81 (0.60, 1.09)	0.57 (0.44, 0.74)**
"I don't know"	0.75 (0.53, 1.07)	0.49 (0.37, 0.65)**
Students whose parents encourage physical activity		
Encourage	1.00	1.00
Neutral	1.13 (0.22, 5.92)	1.47 (0.56, 3.87)
Discourage	1.16 (0.81, 1.65)	1.24 (0.93, 1.64)
The number of physically active friends a student reports having		
≥3 Friends	1.00	1.00
1-2 Friends	0.68 (0.29, 1.57)	0.38 (0.18, 0.80)*
0 Friends	0.59 (0.42, 0.85)*	0.36 (0.25, 053)**

*Note. *p<0.05, **p<0.001*

guideline than students who rated their perceived athletic ability as excellent. This indicates that students who reported being excellent in PA were more likely to meet the CPAGL.

School Level Findings. Males in all school levels (Table 4) were more likely than females to meet physical activity guidelines (Elementary - OR = 1.77, 95% CI = 1.28, 2.45, p<0.001; Intermediate - OR = 2.26, 95% CI = 1.75, 2.91, p<0.001; High - OR = 2.10, 95% CI = 1.60, 2.76, p<0.001). Youth at all school levels who had 0 active friends compared to 3 or more active friends (Elementary - OR = 0.49, 95% CI = 0.29, 0.83, p<0.05; Intermediate - OR = 0.39, 95% CI = 0.24, 0.63, p<0.001; High - OR = 0.51, 95% CI = 0.34, 0.75, p<0.05), and those at the High School level who had 1-2 active friends (OR 0.22, 95% CI 0.08 to 0.60, p<0.05) were less likely to meet the guidelines. Students in all school levels who responded "I don't know" to the statement "Students who are physically active do better at school" (Elementary - OR = 0.56, 95% CI = 0.33, 0.94, p<0.05; Intermediate - OR = 0.55, 95% CI = 0.38, 0.78, p<0.001; High - OR = 0.64, 95% CI = 0.45, 0.91, p<0.05) and students who disagreed in both Elementary (OR 0.57, 95% CI 0.39 to 0.83, p<0.001) and High (OR 0.63, 95% CI 0.44 to 0.89, p<0.05) school were less likely to meet the guidelines. Students in all school levels who reported a perceived athletic ability of Poor (Elementary - OR = 0.55, 95% CI = 0.39, 0.79, p<0.001; Intermediate - OR = 0.31, 95% CI = 0.24, 0.41, p<0.001; High - OR = 0.50, 95% CI = 0.37, 0.70, p<0.001) or Fair (Elementary - OR = 0.46, 95% CI = 0.25, 0.85, p<0.05; Intermediate - OR = 0.18, 95% CI = 0.12, 0.28, p<0.001; High - OR = 0.24, 95% CI = 0.15, 0.36, p<0.001) and students who reported

Table 4

Logistic Regression Odds Ratios by School level for Meeting the 2010 Canadian Physical Activity Guidelines (n=3843)

Variable	Elementary (n=775) OR (95% CI)	Intermediate (n = 1516) OR (95% CI)	High (n=1552) OR (95% CI)
Gender			
Female (ref)	1.00	1.00	1.00
Male	1.77 (1.28, 2.45)**	2.26 (1.75, 2.91)**	2.10 (1.60, 2.76)**
Students' perceived athletic ability			
Excellent	1.00	1.00	1.00
Good	0.34 (0.09, 1.22)	0.13 (0.05, 0.33)**	0.04 (0.01, 0.16)**
Fair	0.46 (0.25, 0.85)*	0.18 (0.12, 0.28)**	0.24 (0.15, 0.36)**
Poor	0.55 (0.39, 0.79)**	0.31 (0.24, 0.41)**	0.50 (0.37, 0.70)**
Students view physically active students as being better in school			
Agree	1.00	1.00	1.00
Disagree	0.57 (0.39, 0.83)**	0.76 (0.55, 1.05)	0.63 (0.44, 0.89)*
"I don't know"	0.56 (0.33, 0.94)*	0.55 (0.38, 0.78)**	0.64 (0.45, 0.91)*
Students whose parents encourage physical activity			
Encourage	1.00	1.00	1.00
Neutral	0.91 (0.17, 4.90)	0.95 (0.23, 3.95)	3.40 (0.84, 13.65)
Discourage	1.64 (0.85, 3.15)	1.16 (0.80, 1.67)	1.15 (0.84, 1.56)
The number of physically active friends a student reports having			
≥3 Friends	1.00	1.00	1.00
1-2 Friends	0.71 (0.21, 2.34)	0.88 (0.36, 2.15)	0.22 (0.08, 0.60)*
0 Friends	0.49 (0.29, 0.83)*	0.39 (0.24, 0.63)**	0.51 (0.34, 0.75)*

*Note. *p<0.05 , **p<0.001*

a perceived athletic ability of Good in both Intermediate (OR = 0.13, 95% CI 0.05, 0.33, p<0.001) and High (OR = 0.04, 95% CI 0.01, 0.16, p<0.001).

Discussion

Overview

This secondary analysis was undertaken to identify if social factor variables selected based on the SCT applied post-hoc, were associated with PA as compared to the 2010 CPAGL, in grades 5 to 12, and whether the resulting behaviour was affected by school level and gender. The research aims guiding the study were to:

1) To examine if social normative influences, personal beliefs, and personal behaviours (tenets of SCT) were associated with youth in PEI meeting the 2010 Canadian Physical Activity Guideline.
2) To examine if the strength of these associations were different by gender.
3) To examine if the strength of these associations were different by school level.

In this discussion section, the results of the analysis are examined with respect to existing literature. The limitations of this study are presented and proposed recommendations for future research and suggest possible interventions to improve the adherence of adolescents to the physical activity guidelines are provided.

Review of Findings

The results of this study support the use of social normative influences, personal beliefs, and personal behaviours (tenets of SCT) in the explanation of adolescent adherence to the 2010 CPAGL. The study regression model accounted for

18.3 % of the variance in students meeting the CPAGL. The strength of this model was not as strong as the model used by Petosa et al. (2005), which determined that the SCT accounted for 31% of variance in the frequency of physical activity. A systematic review and meta-analysis by Plotnikoff, Costigan, Karunamuni and Lubans (2013) found that 33%-48% of variance in physical activity could be explained by the SCT. The level of variance explained in the regression indicates that the model selected was not as strong as previous models used. It may be that the selected variables identified from the post hoc application of the SCT may not have identified and/or defined the variables in the same manner. Further, the variables that were identified may have had different outcome measures from a different context than those identified in this study.

Social Normative Influences

This study aimed to examine, based on previous literature, the impact of social influences on the physical activity behaviour of adolescents. Predictions made for the social norms examined in this study were partially confirmed with respect to the role of peers; however the relationship between the social norms originating from parents was not found to be significant. This aspect of the analysis was not consistent with current literature. Moore et al. (1991) concluded that modelling of parental behaviour (Social Modelling) was correlated with the activity levels of the children and that encouragement of parents was more prevalent in active parents and was indicated as a second correlate to increased activity in children. Beets, Cardinal, and Alderman (2010) conducted a systematic review examining the impact of parental encouragement and found it to be positively related to PA. The

lack of significance for parental encouragement in this study may be a result of the strict conditions required to meet the measure of PA chosen for this study.

The involvement of multiple peers in physical activity was shown to be significantly associated with meeting the CPAGL for both males and females. The significant association was also consistent across school levels. The significance of peers' involvement in PA is consistent with literature that indicates that the support of peers for adolescents is an accurate correlate of PA (Martin & McCaughtry, 2008). The importance of peer support was further reinforced with the result of male students who showed a more notable decrease in the odds of meeting the CPAGL as the number of reported physically active friends decreased. The findings present a potential for a referent effect to physical activity, meaning that if efforts can engage the leaders of peer groups then the other members of these social circles are more likely to participate as well.

Personal Beliefs

The findings regarding the personal beliefs of the study participants were consistent with the literature (Fox, Barr-Anderson, Neumark-Sztained, & Wall, 2010; Van Dijk, De Groot, Savelberg, Van Acker, & Kirschner, 2013), in that they were found to be significant in their association with the PA behaviour of students. What is of particular interest in this case is the difference between males and females in the perceived impact of being physically active on academic performance. Interestingly, gender differences begin to emerge when examining the relationships between the perceived impacts of PA on school performance; this was consistent with the work of Fox, Barr-Anderson, Neumark-Sztained, and Wall (2010) and Van

Dijk, De Groot, Savelberg, Van Acker, and Kirschner (2013). Males were shown to have a significant reduction in their likelihood to meet the CPAGL if they did not perceive PA to be a positive indicator of academic performance. Hausenblas, Carron, and Mack (1997) determined that expected outcome is significant in predicting PA behaviour. Thus by extension, if students expect that participation in PA is likely to lead to positive academic results, then students are more likely to participate (Donelly et al., 2013).

Self-reported perceived athletic ability was selected as a measure of personal beliefs, specifically self-efficacy, and was found to be a significant associated with whether a student met the CPAGL. Self-efficacy was examined in this study and by comparing the student's PA behaviour to his or her beliefs we attempted to determine if self-efficacy is a relevant determinant of PA behaviour for youth in Prince Edward Island. The self-report of athletic ability was consistently significant across genders and all school levels, confirming literature on PA and self-efficacy that shows that youth with higher self-efficacy beliefs in reference to PA are more likely to engage in PA (Taymoori, Lubans, & Berry, 2010). The findings of this study are consistent with the results of the study conducted by Strauss et al. (2001); however that study utilized an accelerometer; a more objective measure of physical activity. The selection of the perceived ability as a measure for self-efficacy in the context of the data collected may not have been a strong enough representation of self efficacy.

Of further note, the likelihood of meeting the CPAGL decreased as students of both genders and all school levels reported decreasingly favourable abilities, from

Excellent, Good, Fair and Poor. The findings for this measure show that students who believed that they were "Excellent" at PA were more likely to meet the CPAGL is further evidence of the importance of belief in one's own ability to perform a behaviour (Janz & Becker, 1984; Rosenstock et al., 1988). It is unclear as to why students who reported good, fair or poor did not have a significant relationship with PA behaviour, either positive or negative. The reason may be the result of the post hoc selection of this variable as a measure for self-efficacy and as such may not be a true indicator of the relationship between self-efficacy and behaviour.

Gender Implications

Consistent with previous established evidence (Active Healthy Kids Canada, 2010), male students were more than twice (OR = 2.08; 95% CI = 1.78, 2.45, $p<0.05$) as likely as female students to meet the CPAGL. The results suggest that more effort should be placed on the recruitment of females to participate in physical activity. Because male students consistently report higher participation in PA, it is clear that there remains a gender gap in participation. It may be possible that current PA policies may be better suited for the recruitment of male students to participate in PA. Gender differences were also found in how males and females view the impact of PA participation on academic performance where it was found that female students did not agree that students who are physically active perform better in school. This view by female students suggests that physical ability and academic ability are not linked, which may help inform specific efforts to recruit more female students. In this case there may be some benefit to promoting the association of academic performance and PA with male students; however based on these findings these

efforts are not likely to increase female PA levels.

Male students who reported having 0 friends who were physically active were less likely to meet the CPAGL guidelines, although the same measure for females was not found to be significant. The results of examining gender differences suggest that female students may not be receiving enough support and encouragement to participate in PA, and in addition the results indicate that females do not have the same belief as males that PA is related to school performance. Conversely, it is possible that the post hoc application of theory in this case does not explain the PA behaviour in females on Prince Edward Island.

School Level Implications

In 2004, Netz and Raviv determined that level of education was significantly associated with PA and that both were positively correlated with self-efficacy. The results of our analysis did not provide any major insights into differences at the school level. With respect to social normative influences, the only relationship of note was that high school students who reported having 0 friends who were physically active were found to be less likely to meet the CPAGL. Students across all school levels were found to be less likely to meet the CPAGL if they reported having 1-2 friends who were physically active, in comparison to the reference group of students reporting having 3 or more friends who were physically active. The differences in PA levels as it pertains to physically active peers is likely as a result of the activities that the students would typically undertake with their peers. In this instance students with 0 or 1-2 friends were not as consistently exposed to peers who are physically active as those students who reported 3 or more friends who

were physically active making them less likely to engage in PA.

Elementary school students who reported being poor at physical activity did not demonstrate a significant reduction in likelihood of meeting the CPAGL. Of note in this instance, is that elementary school level PA is still a mandatory component of education and thus students are still required to participate even if they believe their abilities to be poor.

The findings at the school level did not show substantial variations between school levels, which are not consistent with previous literature. Previous studies showed that as youth progress through school, PA levels decrease (Craggs, Corder, van Sluijs, & Griffin, 2011; Ridgers, Timperio, Crawford, & Salmon, 2012). The findings for school level variation indicated that the SCT may not be the ideal framework for examining school level variation.

Limitations

This study had several limitations common to studies that use self-report surveys completed by youth. Student responses could be inaccurate as a result of students not properly understanding the questions asked, purposely answering incorrectly, and making mistakes with memory recall. Because of the cross-sectional design, no causal inferences can be made about the relationships.

As a secondary analysis of data, this study was inherently limited by the inconsistencies with the initial study. For this study, an attempt was made to determine if the behaviour of students could be explained by selecting measures to represent the tenets of the SCT and applying them to a set of data for secondary analysis. The study was limited from inception because the variables collected for

the study were not specifically included in the initial study to reflect the best measures of the SCT. One example of this is the personal belief of athletic ability which is not the same as believing you can accomplish PA; one of these items is an subjective measure of ability whereas the other is more objectively measured by completion. The results associated with this variable, although they were significant could potentially have affected the overall regression. It is also possible that the variables chosen did not provide an accurate representation of what they were intended to measure in the context of the SCT and consequently were less likely to inform this framework.

Further, this secondary analysis study did not examine PA in a general sense, but rather required the participants to meet several measures of PA to be considered sufficiently active. Because the CPAGL has three measures that students are required to meet in order to be considered sufficiently active, it is likely to exclude students with high levels of PA because of those missing criteria; in other words, students may be physically active but not according to the CAPGL. Specifically, students are required to meet the minimum of 60 minutes of moderate activity daily, they are required to perform 30 minutes of hard or vigorous PA 3 days per week, and are required to engage in strength building activity 3 days per week. The primary condition of note in this case is the participation in strength building PA, which is not commonly accessible. It is possible that facilities and access to programs which provide strength-building environments are limited, which subsequently informs policy that should be focused on making facilities or programs that provide strength building activities more widely available.

Recommendations for Further Research

In this study male students perceived being physically active as an indication that a student performs better in school. The perceived relationship between academic performance and physical activity speaks to the need for increased education towards youth about the multitude of benefits of being active. Typically communicated benefits focus on physical gains of being active like having a healthier body; however there is a strong body of evidence to support the notion that physical activity improves concentration and helps regulate sleep for stronger academic performance (Active Healthy Kids Canada, 2010; Annesi, 2005). Future opportunities to educate students about the benefits of being physically active may be related to academic performance, as well as other possible outcomes. The literature is not clear in this area. However, more recent literature (Donelly et al., 2013; Fox et al. 2010; Van Dijk, De Groot, Savelberg, Van Acker, & Kirschner, 2013) points to the possibility that students themselves are aware that being physically active can improve concentration and school performance but that policies do not reflect this notion in the message they communicate to students when encouraging PA. It is unclear why female students do not report the same association between PA and academic performance; consequently this is an area that warrants further exploration.

Based on the continued difference in male and female PA behaviour, current policy may need to be analysed with consideration being placed on why it is more effective in engaging male students in physical activity over female students.

A cohort analysis of student PA behaviour is warranted, as the 2010 CPAGL

had not been published at the time that the data were collected for this study. An analysis of SHAPES data collected after the release of the 2010 CPAGL would provide insight into the impact of any knowledge translation efforts undertaken to increase adoption of the guideline.

Implications for Practice

From the results of this study, there are a series of practical applications that can be drawn. Understanding the impact of peers on PA behaviours is important to successful intervention. Efforts should focus on engaging youth who report having few or no physically active friends. This study provides evidence to suggest that students who do not have peer groups with whom to be physically active are less likely to be physically active. The Cochrane review by Dobbins et al. (2009) supports the need for interventions which place students in an environment where they are exposed to peers undertaking physical activity behaviours. The review found that; (a) changes to school curriculum; (b) changes in school routines to increase time spent by students being physically active; (c) increase in the time students are engaged in vigorous physical activity during physical education classes; (d) provision of equipment; (e) training for teachers in incorporating physical activity into school curriculum, and (f) routines and educational materials for teachers, students and parents, all led to increased PA behaviours and improved health outcomes. The Cochrane review offers a number of interventions that should be reviewed for implementation, as they have been shown to result in more positive outcomes and increase PA behaviour.

Conclusion

This study was conducted to assess whether the SCT provided a suitable framework for understanding PA. Additionally, potential gender and school level differences were examined for their impact on meeting the CPAGL among adolescents on PEI. The study was a secondary analysis, to which a theoretical model was applied post-hoc that integrated components of the Social Cognitive Theory. By using the literature to select the most appropriate measures to conduct this analysis, it was confirmed that males were more likely than females to meet the CPAGL, and that personal beliefs, including self-efficacy, were significantly related to meeting the CPAGL.

Social normative influences were divided in their significance, allowing for the conclusion that in the context of this analysis, peer norms did have a significant impact on guideline adherence; whereas parental social norms did not have a significant impact. On further analysis it was determined that the role of peers was more significant for male students than female. In regards to school level, no major differences were observed, which is not consistent with the findings of Pate et al. (2009), which found that female PA participation decreases at a rate of 4% per year between grade 6 and 8. Based on this finding it is likely that the post hoc application of a theoretical framework does not explain variations in PA between school levels.

Future research should be focused on addressing the gender disparity in meeting the CPAGL. With regards to female students, an effort should be made to identify how to promote the ancillary benefits of PA for students beyond the health benefits, specifically those related to academic performance.

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SHAPES PEI - 2008 - 2009

School Health Action, Planning & Evaluation System

PA

To all students:

This important survey will help the government of PEI to better understand health behaviour lifestyles (i.e., smoking, physical activity, healthy eating, & mental fitness - feelings & attitudes) among young people in PEI. Your responses will be added with the responses from other students to help us identify what can be done to encourage health in the province.

This is NOT a test. All of your answers will be kept private. No one, not even your parents or teachers, will ever know what you answered. So, please be honest when you answer the questions.

Thank You!

Please use an HB Pencil ONLY

Proper Mark | Improper Marks

SHAPES – PEI would like to thank the Department of Education and Early Childhood Development for funding this survey. This project is a partnership between the Comprehensive School Health Research Team (University of PEI), Centre for Behavioural Research and Program Evaluation (University of Waterloo), and the Health and Education Research Group (University of New Brunswick).

...a SHAPES project

About You

1. **What grade are you in?**

- ○ Grade 5
- ○ Grade 6
- ○ Grade 7
- ○ Grade 8
- ○ Grade 9
- ○ Grade 10
- ○ Grade 11
- ○ Grade 12

2. **How old are you today?**

- ○ 11 years or younger
- ○ 12 years
- ○ 13 years
- ○ 14 years
- ○ 15 years
- ○ 16 years
- ○ 17 years
- ○ 18 years or older

3. **Are you...**

- ○ Female?
- ○ Male?

4. **Are you currently eating less than usual to lose weight?**

- ○ Yes
- ○ No

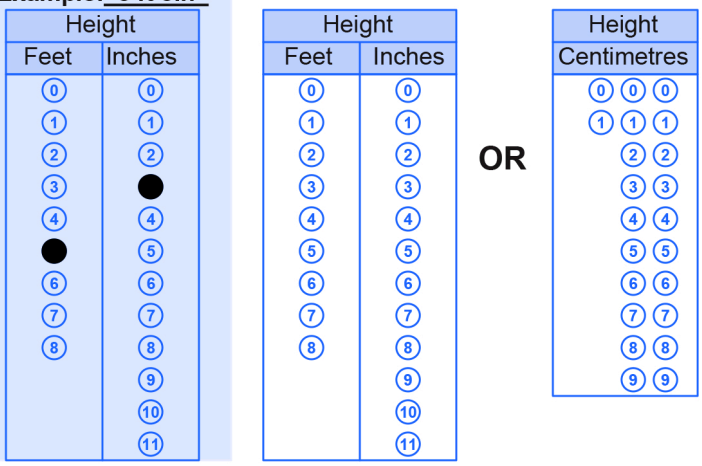
For Office Use Only	⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

Height and Weight

5. **How tall are you <u>without</u> your shoes on?** (Write your height on the line and then fill in the appropriate numbers for your height in feet and inches **<u>OR</u>** centimetres.)

"My height is _____"

Example: 5 ft 3in

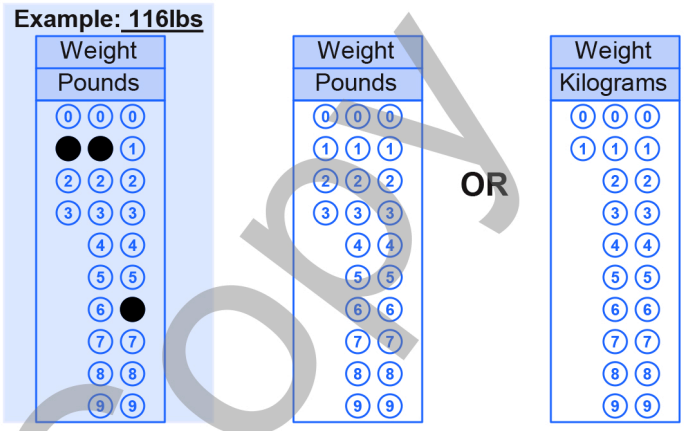


○ I do not know

6. **How much do you weigh <u>without</u> your shoes on?** (Write your weight on the line and then fill in the appropriate numbers for your weight in pounds **<u>OR</u>** kilograms.)

"My weight is _____"

Example: 116lbs



○ I do not know

We would now like to ask you some questions about your smoking behaviour.

7. **Are you a smoker?**

○ Yes
○ No

8. **Have you <u>ever</u> tried cigarette smoking, even just a few puffs?**

○ Yes
○ No

9. **Do you think in the future you <u>might try smoking</u> cigarettes?**

○ Definitely yes
○ Probably yes
○ Probably not
○ Definitely not

10. **If one of your best friends was to offer you a cigarette would you smoke it?**

○ Definitely yes
○ Probably yes
○ Probably not
○ Definitely not

11. **At any time during the <u>next year</u> do you think you will smoke a cigarette?**

○ Definitely yes
○ Probably yes
○ Probably not
○ Definitely not

12. **Have you ever smoked a <u>whole</u> cigarette?**

○ Yes
○ No

13. **On how many of the last 30 days did you smoke one or more cigarettes?**

○ None
○ 1 day
○ 2 to 3 days
○ 4 to 5 days
○ 6 to 10 days
○ 11 to 20 days
○ 21 to 29 days
○ 30 days *(every day)*

We would now like to ask you some questions about your physical activity.

14. **HARD** physical activites are jogging, team sports, fast dancing, jump-rope and any other physical activities that increase your heart rate and make you breathe hard and sweat.

Mark how many minutes of HARD physical activity you did on each of the last 7 days. This includes physical activity during physical education class, lunch, recess, after school, evenings, and spare time.

For example: if you did 45 minutes of hard physical activity on Monday, you will need to fill in the 0 hour circle and the 45 minute circle, as shown below:

	Hours					Minutes			
Monday	●	1	2	3	4	0	15	30	●

	Hours					Minutes			
Monday	0	1	2	3	4	0	15	30	45
Tuesday	0	1	2	3	4	0	15	30	45
Wednesday	0	1	2	3	4	0	15	30	45
Thursday	0	1	2	3	4	0	15	30	45
Friday	0	1	2	3	4	0	15	30	45
Saturday	0	1	2	3	4	0	15	30	45
Sunday	0	1	2	3	4	0	15	30	45

15. **Were the last 7 days a typical week in terms of the amount of HARD physical activity that you usually do?**

- ○ Yes
- ○ No, I was *more* active in the last 7 days
- ○ No, I was *less* active in the last 7 days

16. **MODERATE** physical activities are lower intensity activities such as walking, biking to school, and recreational swimming.

Mark how many minutes of MODERATE physical activity you did on each of the last 7 days. This includes physical activity during physical education class, lunch, recess, after school, evenings, and spare time. Do not include time spent doing hard physical activities.

For example: if you did 1 hour and 30 minutes of moderate physical activity on Monday, you will need to fill in the 1 hour circle and the 30 minute circle, as shown below:

	Hours					Minutes			
Monday	0	●	2	3	4	0	15	●	45

	Hours					Minutes			
Monday	0	1	2	3	4	0	15	30	45
Tuesday	0	1	2	3	4	0	15	30	45
Wednesday	0	1	2	3	4	0	15	30	45
Thursday	0	1	2	3	4	0	15	30	45
Friday	0	1	2	3	4	0	15	30	45
Saturday	0	1	2	3	4	0	15	30	45
Sunday	0	1	2	3	4	0	15	30	45

17. **Were the last 7 days a typical week in terms of the amount of MODERATE physical activity that you usually do?**

- ○ Yes
- ○ No, I was *more* active in the last 7 days
- ○ No, I was *less* active in the last 7 days

18. **<u>In the last 7 days</u>, how many times were your parents, step-parents or guardians physically active (e.g. walking, running, biking, going to the gym, doing yard work, etc.) for <u>at least 30 - 60 minutes</u>?**

- ○ 0 times
- ○ 1 - 2 times
- ○ 3 - 5 times
- ○ 6 - 7 times
- ○ More than 7 times
- ○ I'm not sure
- ○ I have no parents, step-parents, or guardians

19. **How much do your parents, step-parents, or guardians encourage you to be physically active?**

- ○ Strongly encourage
- ○ Encourage
- ○ Do not encourage or discourage
- ○ Discourage
- ○ Strongly discourage

20. **How much do your parents, step-parents, or guardians support you in being physically active?** (e.g. driving you to team games, buying you sporting equipment, etc.)

- ○ Very supportive
- ○ Supportive
- ○ Unsupportive
- ○ Very unsupportive

21. **<u>In the last 7 days</u>, how did you *usually* get to and from school?**

- ○ Actively (e.g. walk, bike, skateboard)
- ○ Inactively (e.g. car, bus, public transit)
- ○ Mixed (actively and inactively)

22. **Your closest friends are the friends you like to spend the most time with. How many of your closest friends are <u>physically active</u>?**

- ○ None
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5 or more

23. **<u>In the last 7 days</u>, how many days did you do exercises to *strengthen or tone your muscles*, such as push-ups, wall climbing, bowling, or weight lifting?**

- ○ 0 days
- ○ 1 day
- ○ 2 days
- ○ 3 days
- ○ 4 days
- ○ 5 days
- ○ 6 days
- ○ 7 days

24. **<u>In the last 7 days</u>, how many days did you do exercises *for flexibility*, such as stretching or yoga?**

- ○ 0 days
- ○ 1 day
- ○ 2 days
- ○ 3 days
- ○ 4 days
- ○ 5 days
- ○ 6 days
- ○ 7 days

25. **<u>In the last 7 days</u>, did anything prevent you from doing your normal physical activities (e.g. illness, away from home, too many shifts at work)?**

- ○ Yes
- ○ No

26. **<u>In the last 7 days</u>, how many Physical Education classes did you have?**

- ○ 0 classes
- ○ 1 class
- ○ 2 classes
- ○ 3 classes
- ○ 4 classes
- ○ 5 or more classes

27. **What do you enjoy about your physical education classes?** *(Mark all that apply)*

- ○ Being active
- ○ Getting fit
- ○ Having fun
- ○ Variety of activities
- ○ Learning different sports
- ○ Socializing with friends
- ○ Learning about healthy bodies
- ○ Nothing

28. **Do you have a chance to be physically active in other classes besides physical education?**

- ○ No
- ○ Yes, some other classes
- ○ Yes, all other classes

29. **Students who are physically active do better at school.**

- ○ Strongly agree
- ○ Agree
- ○ Disagree
- ○ Strongly disagree
- ○ I do not know

30. **In general, compared to other people your age, how would you rate your athletic ability?**

- ○ Excellent
- ○ Good
- ○ Fair
- ○ Poor

31. **Do you participate in competitive or non-competitive sports or clubs <u>not</u> organized by your school?**

○ Yes ○ No

32. **Do you do individual physical activities <u>outside of school</u> (e.g. jogging, biking)?**

○ Yes ○ No

33. **Do you participate in before-school, noon hour, or after-school physical activities organized by your school (e.g. intramurals, non-competitive clubs)?**

○ Yes ○ No ○ None offered

34. **Do you participate in competitive school sports teams that compete against other schools (e.g. junior varsity or varsity sports)?**

○ Yes ○ No ○ None offered

35. **Outside of classes (e.g. phys ed) do you have any other chances to be physically active at school?**

○ Yes ○ No

36. **Do the facilities at your school meet the physical activity needs of students?**

a. Indoor facilities ○ Yes ○ No
b. Outdoor facilities ○ Yes ○ No

37. **What do you think of the number of competitive and non-competitive sports and clubs offered by your school?**

- ○ Does not matter to me
- ○ Too few
- ○ Just right
- ○ Too many

38. **<u>In the last 7 days</u>, how much *total time* did you spend doing homework?**

- ○ None
- ○ Less than 1 hour
- ○ From 1 to 6 hours
- ○ From 7 to 13 hours
- ○ 14 or more hours

39. **<u>In the last 7 days</u>, how much *total time* did you spend reading, not counting at work, at school, or for homework?** *(<u>Include</u> reading books, magazines, and newspapers)*

- ○ None
- ○ Less than 1 hour
- ○ From 1 to 6 hours
- ○ From 7 to 13 hours
- ○ 14 or more hours

40. **Mark how much time you spent watching TV/movies, playing video games, or playing computer games on <u>each of the last 7 days</u>.**

For example: if you spent 3 hours doing these activities on Monday, you would need to fill in the 3 hour circle, as shown below:

	Hours per Day						
Monday	0	1	2	●	4	5	6

	Hours per Day						
Monday	0	1	2	3	4	5	6
Tuesday	0	1	2	3	4	5	6
Wednesday	0	1	2	3	4	5	6
Thursday	0	1	2	3	4	5	6
Friday	0	1	2	3	4	5	6
Saturday	0	1	2	3	4	5	6
Sunday	0	1	2	3	4	5	6

41. **Mark how much time you spent talking on the phone, surfing the internet, or texting on <u>each of the last 7 days</u>.**

For example: if you spent 2 hours doing these activities on Monday, you would need to fill in the 2 hour circle, as shown below:

	Hours per Day						
Monday	0	1	●	3	4	5	6

	Hours per Day						
Monday	0	1	2	3	4	5	6
Tuesday	0	1	2	3	4	5	6
Wednesday	0	1	2	3	4	5	6
Thursday	0	1	2	3	4	5	6
Friday	0	1	2	3	4	5	6
Saturday	0	1	2	3	4	5	6
Sunday	0	1	2	3	4	5	6

42. **In your school, how much emphasis is placed on:**

	None	A little	Some	A lot	I don't know
a. Student participation in competitive sports?	○	○	○	○	○
b. Student participation in non-competitive sports or clubs (e.g. intramurals)?	○	○	○	○	○
c. Developing positive attitudes about physical activity?	○	○	○	○	○
d. Developing students' self-esteem (e.g. feeling good about yourself)?	○	○	○	○	○
e. Informing students about opportunities to be physically active (e.g. bulletin boards, announcements)?	○	○	○	○	○
f. Involving students in planning/organizing physical activities?	○	○	○	○	○
g. School staff being physically active in your school?	○	○	○	○	○

We would now like to ask you some questions about your eating behaviour.

43. **YESTERDAY,** ***from the time you woke up until the time you went to bed,*** **how many times did you eat the following foods...**

	Number of times					
	None	1	2	3	4-5	6+
a) **salty snacks?** (for example, chips, cheesies, nachos, buttered popcorn)	○	○	○	○	○	○
b) **nuts or seeds?** (for example, peanuts, peanut butter, sunflower seeds)	○	○	○	○	○	○
c) **lentils, chickpeas** (for example, hummus), **kidney beans, or other dried beans?**	○	○	○	○	○	○
d) **fish or shellfish?** (for example, canned tuna, salmon, trout, shrimp)	○	○	○	○	○	○
e) **breaded/fried chicken or breaded/fried fish?** (for example, chicken nuggets, fingers, fish sticks)	○	○	○	○	○	○
f) **one slice of pizza or a pizza snack?** (for example, a pizza pop®)	○	○	○	○	○	○
g) **one hot dog or sausage on a bun?**	○	○	○	○	○	○
h) **one hamburger or cheeseburger?**	○	○	○	○	○	○
i) **one sub or deli sandwich?**	○	○	○	○	○	○
j) **whole grains?** (for example, whole grain bread or pasta, brown rice, whole grain cereal; like oatmeal, shredded wheat, or Mini-Wheats®)	○	○	○	○	○	○
k) **fruit, not including juice?** (for example, fresh, dried, canned or frozen fruit)	○	○	○	○	○	○
l) **dark green vegetables?** (for example, lettuce, broccoli, green beans)	○	○	○	○	○	○
m) **dark orange vegetables?** (for example, carrots, squash, sweet potatoes/yams)	○	○	○	○	○	○
n) **other vegetables?** (for example, other raw or cooked vegetables, like corn)	○	○	○	○	○	○
o) **French fries or other fried potatoes?** (for example, wedges, hash browns, poutine)	○	○	○	○	○	○
p) **one package of candy or one chocolate bar?**	○	○	○	○	○	○
q) **one slice of cake or pie, two cookies, one doughnut, one brownie, or other baked sweets?**	○	○	○	○	○	○
r) **ice cream, an ice cream bar, frozen yogurt, a popsicle®...?**	○	○	○	○	○	○

44. **YESTERDAY, *from the time you woke up until the time you went to bed,* how many servings of the following did you drink?**

	Number of servings					
	None	1	2	3	4-5	6+
a) **white or chocolate milk, or soy beverage** (for example, one cup or small carton of milk)	○	○	○	○	○	○
b) **100% fruit juice or vegetable juice** (for example, one cup or drinking box-size serving of 100% orange, apple, or tomato juice)	○	○	○	○	○	○
c) **fruit-flavoured drinks** (for example, one cup or drinking box-size serving of Kool-aid®, Sunny D®, or lemonade)	○	○	○	○	○	○
d) **regular (non-diet) pop or soft drinks** (for example, one cup or can of pop)	○	○	○	○	○	○
e) **diet pop or soft drinks** (for example, one cup or can of diet pop)	○	○	○	○	○	○
f) **sports drinks** (for example, one cup or a small bottle of Gatorade®)	○	○	○	○	○	○
g) **high energy drinks** (for example, one cup or can of Red Bull®)	○	○	○	○	○	○
h) **hot chocolate, cappuccino, or frappaccino** (for example, one mug of hot chocolate)	○	○	○	○	○	○
i) **tea, iced tea, or coffee** (for example, one mug or medium coffee)	○	○	○	○	○	○
j) **slurpees, slushies, or snow cones** (for example, one small slurpee)	○	○	○	○	○	○
k) **shakes** (for example, one small milkshake)	○	○	○	○	○	○
l) **water** (for example, one cup or small bottle of water)	○	○	○	○	○	○

We would now like to ask your some questions about your feelings.

45. **We are interested in how you feel about yourself and how you think other people see you. For each item, fill in the circle that best describes your feelings and ideas in the past week.**

	Really false for me	Sort of false for me	Sort of true for me	Really true for me
a. I feel I do things well at school.	○	○	○	○
b. My teachers like me and care about me.	○	○	○	○
c. I feel free to express myself at home.	○	○	○	○
d. I feel my teachers think I am good at things.	○	○	○	○
e. I like to spend time with my parents.	○	○	○	○
f. I feel free to express myself with my friends.	○	○	○	○
g. I feel I do things well at home.	○	○	○	○
h. My parents like me and care about me.	○	○	○	○
i. I feel I have a choice about when and how to do my schoolwork.	○	○	○	○
j. I feel my parents think that I am good at things.	○	○	○	○
k. I like to be with my teachers.	○	○	○	○
l. I feel I have a choice about which activities to do with my friends.	○	○	○	○
m. I feel I do things well when I am with my friends.	○	○	○	○
n. My friends like me and care about me.	○	○	○	○
o. I feel free to express myself at school.	○	○	○	○
p. I feel my friends think I am good at things.	○	○	○	○
q. I like to spend time with my friends.	○	○	○	○
r. I feel like I have a choice about when and how to do my household chores.	○	○	○	○

SIGNATURE PAGE

REB Letter

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